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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,924	07/31/2003	Masahiro Kobayashi	051319/0050	9662

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EXAMINER

MULLINS, BURTON S

ART UNIT PAPER NUMBER

2834

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/631,924

**Applicant(s)**

KOBAYASHI, MASAHIRO

**Examiner**

Burton S. Mullins

**Art Unit**

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18 is/are allowed.
- 6) ☒ Claim(s) 1, 5, 11 and 13 is/are rejected.
- 7) ☒ Claim(s) 2-4, 6-10, 12 and 14-17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119 .

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on February 25th, 2005 has been considered by the examiner.

### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the magnetic shield (claims 5 and 13) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

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application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Moffitt (US 6,472,841). Moffitt teaches a variable reluctance resolver comprising multiple stator magnetic poles 1-16 (Fig.1) having resolver exciter coils 32 and resolver output coils 38 and 40 which respectively output the X component and Y component of a rotary angle in accordance with the rotation of a rotor, wherein the resolver output coils 38 and 40 are wound such that the output voltage polarities of resolver output coils wound around at least three adjacent stator magnetic poles are the same, e.g., the coils 38 carried by poles 1-4 (c.2, lines 45-57), the resolver output coils are divided into at least two or a greater even number of groups (c.3, lines 1-2), and resolver output coils within each group of the at least two or a greater even number of groups are connected in series (Fig. 1, c.3, lines 13-15) such that the output voltage polarities of adjacent

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groups of the at least two or a greater even number of groups differ with respect to one another, (Fig.4, c.3, lines 18-50).

6. Claims 1 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Piedl et al. (US 6,472,841). Piedl teaches a resolver comprising multiple stator magnetic poles (teeth) 1-16 (Fig.1) having resolver exciter coils E1/E2 and resolver output coils S1/S2 and C1/C2, which respectively output the X component and Y component of a rotary angle in accordance with the rotation of a rotor, wherein the resolver output coils S1/S2/C1/C2 are wound such that the output voltage polarities of resolver output coils wound around at least three adjacent stator magnetic poles are the same, e.g., coils S2, C1 and C2 are wound clock wise around adjacent pole teeth 1-3 (Table 1), the resolver output coils are divided into at least 2 or a greater even number of groups, i.e., coils S1, S2, C1 and C2 comprising four groups, and resolver output coils within each group of the at least two or a greater even number of groups are connected in series (inherent that the coils in each of S1, S2, C1 and C2 are connected in series) such that the output voltage polarities of adjacent groups of the at least two or a greater even number of groups differ with respect to one another, i.e., group S2 coils are wound clockwise about teeth 3 and 7, while adjacent group C1 coils are wound counterclockwise on adjacent teeth 4 and 8 (see Table 1). Regarding claim 11, the coils of each output coil group S1, S2, C1 and C2 are wound around at least three sequential stator teeth, the term 'sequential' not narrowly construed as 'immediately adjacent' but merely following a sequence, in this case, every other tooth.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Moffitt or Piedl as applied to claims 1 and 11 above, further in view of JP 2001-191931 (as disclosed by applicant in paragraph 24 of the specification). Piedl does not teach a magnetic shield.

JP '931 teaches a motor with a resolver and a hollow, disk-shaped magnetic shield disposed between the motor stator and the resolver stator in order to reduce the negative effects arising from external magnetic fields received by the resolver.

It would have been obvious to modify Piedl and provide a magnetic shield per JP '931 in order to reduce the negative effects arising from external magnetic fields received by the resolver.

***Allowable Subject Matter***

9. Claims 2-10, 12 and 14-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Regarding claims 2 and 12, the prior art does not teach that each group has outermost output coils and output coils between the outermost output coils, with the number of turns of each of the outermost output coils less than the number of turns of

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the output coils between the outermost output coils, thus reducing the effect of external magnetic flux.

Regarding claims 6 and 14, the prior art does not disclose the claimed combination of specific numbers of resolver axis multiple angles, excitation pole pair counts, output pole pair counts and stator pole counts with four output coil groups, with one group of the four groups includes output coils wound around five adjacent stator magnetic poles such that the polarity of output voltages in the group is the same, and the output coils in each of the four groups are serially connected so that the output voltage polarities of adjacent groups are different.

10. Claim 18 is allowed. See preceding reasons for claims 6 and 14.

### *Conclusion*

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Burton S. Mullins  
Primary Examiner  
Art Unit 2834

bsm  
25 May 2005